

THIRD PARTY MAINTENANCE (TPM)

OPPORTUNITIES FOR

BELL CANADA INTERNATIONAL

Prepared For:

BELL CANADA INTERNATIONAL

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TPM OPPORTUNITIES FOR BELL CANADA INTERNATIONAL

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I INTRODUCTION

A. OBJECTIVES

- This study, prepared by INPUT LTD for Bell Canada International provides research and analysis for the viability of Bell Canada International's pursuit of TPM opportunities in Europe.
- Objectives of the research are threefold:
 - Given that the soundest approach to creating a TPM business in Europe is through either a joint venture or acquisition or a combination thereof, with an existing TPM service firm, the first objective was to find qualified TPM vendor candidates. Qualifications, generally, were:
 - . That the TPM company's revenues are currently between \$3 million and \$10 million.
 - . Its customer base includes large customer accounts and/or agents to manufacturers of office information systems.
 - . A successful track record with good market share and optimistic outlook.
 - . That the European TPM business has the potential of yielding \$50 million per year with 15%-25% gross profit before tax within 3 years.
 - The second objective was to examine end users who previously expressed interest in using, or who are currently using, TPM. This includes analysing such firms in terms of type, industry, location, size, TPM requirements, propensity for buying TPM and the like.

- Finally, a better understanding of how manufacturers and dealers perceive TPM, either as a potential user of TPM or as a resource for TPM, was undertaken.

B. SCOPE

- The scope of the study was limited to the United Kingdom, Holland, West Germany and France for the TPM vendor search and the United Kingdom and France for the TPM user profiles.
 - There was a heavy concentration of UK firms in the vendor sample owing to the qualifications (stated under Objectives above) required.
 - Likewise, a large sample of users in the UK was selected because of their relatively advanced and knowledgeable attitude towards TPM.
 - France was included in both user and vendor enquiries to the extent that a better definition of the TPM market there could be attempted.

C. METHODOLOGY

- Sources of information relating to this study included users and vendors who previously responded to INPUT LTD 1983 Annual and TPM Surveys. Thirteen on-site and 80 telephone interviews were conducted using separate questionnaires for TPM vendor and users and manufacturers/dealers. Exhibits I-1 to I-3 show respondent TPM vendors and users and manufacturers/dealers respectively.
- The exchange rate used is 1 Pound Sterling = 1.45 Dollars.

EXHIBIT I-1

List of Respondent Vendors

(UK unless otherwise noted)

- Advanced Technology Maintenance Ltd (ATM)
- Bitronic Hardware Service Company (Germany)
- Cable and Wireless UK Services Ltd
- Computer Field Maintenance Ltd (CFM)
- Data Processing Customer Engineering Ltd (DPCE)
- Decision Data (French)
- Escon (Holland)
- GCS Engineering Ltd
- ITS (French)
- Kode Services Ltd
- Mainstay Computer Cover Ltd
- Mills Associates Ltd
- Nexel Ltd
- Systems Maintenance and Services Ltd (SMS)
- Thijssen (Holland)
- Vollwood (German)

EXHIBIT I-2

List of Respondent Users

• Brighton Polytechnic	• B Show and Sons
• Buckley and Bland	• Burbeck College
• Cargill	• Cugin*
• Consolidated Pneumatics	• Coulter Electronics
• CTL	• Editors Nathan*
• Ellis and Everard	• Estee Lauder
• Falmer Jeans	• Fabergé
• Filigree	• Glove Corporation
• Hall and Woodhouse	• Hiero Brothers Ltd
• Ideal Insurance Group	• Imperial College
• J M Dent	• J Weir and Sons
• Kalon Ltd	• Kellock Factors
• Kent Messenger	• Landis and Gyn
• Magnalite	• Mairie de Moulins*
• Metal Castings	• Morley Book Co.
• Myson Copperad	• Neil & Spencer
• Northern Star Insurance	• Ogen Group
• Redifussion	• Retail Audits Ltd
• Rhin and Moselle*	• Salti*
• S. Baron	• Scottish Television
• Siliconix	• The Prestige Group
• Tormac Roadstone	• Trusthouse Forte
• Twin Dish Int'l	• UDT
• Veeder Root	• Watford College
• W.A. Turner	• Weetabix Ltd

*French Firms - All others are UK

EXHIBIT I-3

Respondents As Performers of or Candidates for TPM

- Bell & Howell
- CDC
- Centronics
- Commodore
- Computervision
- Data General
- Digital Equipment Corp.
- Ericsson
- Floating Point
- General Automation
- Hewlett-Packard
- Hitachi
- Honeywell
- IBM
- ICL
- ITT
- Keinzle
- 3M
- Mannesman Tally
- NCR
- Osborne
- Plessey
- Prime
- Sharp
- Tandy
- Texas Instruments
- Verran
- Wordplex

II MANAGEMENT SUMMARY

A. CONCLUSIONS

- The TPM business in Europe continues to be extremely promising and awaiting significant market penetration. Exhibit II-1 provides an updated summary of the estimated TPM activity in the UK, Continental Europe, and Scandanavia.
 - The UK continues to be the apparent leader in the TPM market owing to its initial leadership role in TPM and critical mass.
 - Over 150 TPM firms are estimated to exist, 70% of which exist or are headquartered in the UK.
 - While the 1984 estimate for TPM business currently under contract is \$123 million, the unrealised potential ranges between \$462 million and \$1159. This is based on user responses to INPUT's 1983 The Third Party Maintenance Market in Europe study with 1984 adjustments.
- Since The Third Party Maintenance Market in Europe was published in June 1983 a number of large US based companies have expressed a keen interest in European TPM business opportunities.
 - Bell and Howell, in the Autumn, announced a TPM organisation to pursue microcomputer service.
 - Other American companies known to be considering TPM in Europe include:
 - . Control Data Corporation
 - . General Electric (Calma Division)
 - . International Telephone and Telegraph (ITT)
- IBM equipment and mainframes represent an especially good TPM market because of:

EXHIBIT II-1

Updated Summary: TPM Market in Europe - 1984

Market	<u>Total Estimate Maintenance Expenditure</u> (\$ millions)	<u>Estimated Current Expenditure for TPM</u> (\$ millions)	<u>Estimated Number of TPM Firms</u>	<u>Estimated Total TPM Market Including Current Expenditure</u> (\$ millions)	
				<u>Pessimistic</u>	<u>Optimistic</u>
West Germany	\$1824	17	11	\$ 85	\$274
France	1480	11	8	90	222
United Kingdom	1130	67	107	297	339
Italy	795	6	10	14	159
Scandinavia	458	8	5	35	92
Netherlands	269	7	5	32	55
Spain	269	1	2	4	40
Switzerland	242	1	2	5	46
Belgium	148	3	3	17	41
Austria	68	1	1	3	8
Portugal	47	1	1	3	6
TOTAL	\$6730	\$123	155	\$585	\$1282

Source: Input Estimate

- The large number of IBM machines installed in Europe
- And IBM's relatively open policy in providing spares, back-up support and maintenance documentation.
- Other major mainframe manufacturers who have substantial equipment bases for potential TPM include:
 - Honeywell
 - Sperry
 - Digital Equipment
 - Control Data
 - ICL
 - NCR
- These companies have been known to discourage TPM competition through pricing and policy strategies. They also have been known to intimidate their users regarding TPM. With TPM as a significant mechanism for opening freer competition these obstacles should become less and less of a deterrent.
- The list of merger or joint venture candidates for European TPM business is shown in Exhibit II-2. The candidates, all from the United Kingdom, were chosen on the basis of six selection criteria factors against which each TPM company was graded where a score of 1=unacceptable and 5=outstanding.
 - Financial: Qualitative and quantitative aspects of revenue, profit and assets performance and projections are included.
 - Equipment Serviced: Maintaining a large amount of equipment with a relatively small number of engineers is not advisable. Agreements with manufacturers as their service agent is important.
 - Management: Company leadership and management attitudes, characteristics, aggressiveness, and perfor-

EXHIBIT II-2

Selection Criteria For European TPM
Joint Venture/Acquisition Candidate

1=unacceptable, 2=fair, 3=good, 4=excellent, 5=outstanding

Criteria	TPM COMPANY/SCORE													
	ATM	BITRO-NIC	C&W	CFM	ES-CON	GCS	ITS	MAIN	MILLS	SMS	KODE	DPCE	THIJ-SEN	VOLL-WOOD
1. Financial	2	2	5	5	2	4	4	2	3	3	3	4	3	3
2. Operations	3	3	4	4	1	4	4	3	3	3	3	4	3	4
3. Equipment Serviced	3	2	4	4	3	3	4	3	3	3	3	4	2	1
4. Management	4	3	3	5	3	5	3	4	3	3	3	3	3	3
5. Marketing	2	2	4	4	3	5	2	5	3	3	3	3	2	3
6. Attitude toward JV, merger, acquisition	3	2	3	3	2	5	1	3	1	1	2	4	2	4
TOTAL SCORE	17	14	23	25	14	18	20	16	16	16	17	24	15	20

mance are the basis for this evaluation.

- Marketing: A key aspect of successful TPM penetration is effective marketing. Evaluation was based on the company's market share, innovation and their promotional style and method.
- Attitude towards joint venture/acquisitions: Each TPM respondent was graded on its interest in pursuing discussions with a "large North American Company".
- The list of candidates, based on selection criteria as evaluated by INPUT, include:
 - First Choice : GCS 26 points
 - Second Choice : CFM 25 points
 - Third Choice : DPCE 24 points
 - First Alternate : Cable & Wireless 23 points
 - Second Alternate : Mainstay 23 points
 - Third Alternate : Vollwood 20 points
- Users continue to have a high interest in TPM and are so motivated, primarily because they believe TPM is more economical than manufacturer's service. Many users who would consider TPM don't know about the availability of TPM Companies and resources which emphasises the need for TPM marketing. User attitudes towards TPM are provided in Chapter IV.
- Most manufacturers are willing to support efforts of independent TPM as shown in II-3.
- Complete profiles for each company are included in Chapter III. Questionnaires and examples of promotional literature for each candidate are included in the Appendix.

B. RECOMMENDATIONS

EXHIBIT II-3

Manufacturers' Willingness To Support Independent TPM Companies

<u>Percent</u>	<u>Degree of Support</u>
43%	Willing to support TPM
36%	Reluctantly Willing to support TPM
14%	Unwilling to support TPM
7%	Don't Know

- Bell Canada International should, through INPUT LTD, arrange to meet with recommended merger/joint venture candidates for further exploratory conversations. These meetings would probably last between 1 and 3 hours with an agenda as follows:
 - Introduction to BCI
 - Review of TPM business
 - Discussion regarding opportunities
 - Type(s) of merger/joint venture plans
 - Goals
 - Facility tour
 - Action plan
- A deal should be made as quickly as possible with one or more of the recommended TPM firms.
- In order of preference, the candidates are:
 - GCS, an aggressive, well managed, innovative and marketing oriented company with current revenues of \$5.8 million.
 - CFM, the largest TPM firm in the UK and Europe, established and with an ideal product line and strong management. Revenues approximately \$11.9 million.
 - DPCE, an aggressive TPM firm who would be interested in a joint venture in Europe as well as in the U.S.
- While further exploratory talks are taking place, BCI should, in parallel, expand the effort to locate manufacturers and distributors prospects for TPM. Additionally, further research into financially weaker manufacturing companies should be pursued to examine possibilities of buying their maintenance divisions, e.g. Osborne.

III TPM VENDOR PROFILES

A. BITRONIC HARDWARE SERVICE COMPANY

Frankfurt

Telephone: 611225

1. SUMMARY

- Bitronic is a privately held service company operating in Germany only from bases in Hamburg and Frankfurt. They have about 5 engineers with 20-25 part-time tech support engineers. They claim to do about 3 million marks, less than 1 million dollars, annually and do not anticipate any growth because of the competitive nature of the market. Bitronic started TPM in 1977. They service medium and small systems and claim to have about 100 clients.

2. JOINT VENTURE

- The two managing directors and owners of the company don't seem excited to enter into a deal but wouldn't "be against it if the price was right". They promised to send brochure and financials which we haven't yet received as yet.

B. CABLE AND WIRELESS UK SERVICES LTD

83 Blackfriars Road, London SE1 8HQ.

Telephone: 01-633-9577 Telex: 915453

Est. 1968. Parent Co.: Cable and Wireless Plc

1. SUMMARY

- Minicomputers, larger micros and a full range of peripherals are serviced by Cable and

Wireless. The IBM personal computer is the smallest of the micros dealt with.

- Established for nine years, the company services England, Scotland and Wales, presently totalling 1000 user sites. Cable and Wireless is considering the possibility of moving into Europe as a service organisation.
- One hundred field engineers are employed who have received both in-house and external training. A substantial parts inventory is available for the field engineers.
- Costs are fixed for a specific machine type. Service contracts are negotiable and this flexibility is, says Cable and Wireless, one of the most attractive facets of the service offered.

2. FINANCIAL

- Cable and Wireless Service's 1983 TPM turnover was \$5.8 million, up 11% from 1982, reflecting the sluggish economy as well as Cable and Wireless' reorganisations under its move to the private sector from previous government control.
- Conservative estimates for revenue turnover in future years is as follows:
 - 1984 : \$6.5 million
 - 1985 : \$9.4 million
 - 1986 : \$9.4 million
- Gross profit before tax is estimated at 22%. Assets are estimated at \$1.1 million.

3. AGREEMENTS WITH SUPPLIERS TO MAINTAIN THEIR EQUIPMENT
 - None reported
4. SPARES HOLDING POLICY
 - Balanced spares holding to provide adequate service.
5. TYPES OF CONTRACT
 - Ad hoc for breakdowns.
 - Routine maintenance; breakdowns charged time and parts.
 - Short term standby agreements.
 - Other types of contract: Any type of contract can be quoted, providing flexibility to meet customers requirements.
6. LEVELS OF CALL OUT RESPONSE AVAILABLE
 - Ad hoc, within hours: 2,4,8,24,48.
 - Contract, within hours: 2,4,8,24,48.
 - These available: 9.am-5pm, shift & a half, 24 hours; 7 days and public holidays.
 - Engineer works on if on site repairs not completed at end of his shift.
 - Contracts available with engineers resident on site.
7. SERVICE AREA AND CENTRES
 - All UK
 - London, East Kilbride, Leeds, Sutton, Coldfield, Bristol, Rickmansworth, Manchester,

Redcar, Neath.

8. OTHER SERVICES

- Supplies and installs systems; system building and commissioning.

9. ORGANISATION

- There is strong management in branch offices. Headquarters management is lean. Gabby Shaw, Managing Director, is very competent, well known and respected by US and European field service managers.
- Cable Wireless Service has an excellent reputation and is technically skilled to meet vigorous TPM requirements.

10. MARKETING

- Cable and Wireless Service is considered an aggressive marketer of TPM and has several large national accounts, including British Steel and Esso. They view the TPM market as "evolutionary" rather than "revolutionary" emphasising the need for customers to become accustomed to TPM.

11. JOINT VENTURE/ACQUISITION ATTITUDE

- Cable and Wireless Service is reported to be a cash-rich company and therefore not interested in being considered on the selling end of an acquisition. They already have a partnership established with Western Union for "Easy Link" service.
- Cable and Wireless would be interested in two types of deals:

- First, they would consider a joint venture to exploit the Continental European TPM market (France, Germany, Benelux etc).
- Secondly, they would be willing to pursue discussions to sell off their Continental European divisions.

C. CFM

Excell House, Trust Industrial Estate,
Hitchin, Herts SG4 0UZ
Tel : Hitchin (0462) 51511 Telex: 826649
Est. 1970. 90% turnover from IM Parent Co:
International Aeradio Ltd.

1. SUMMARY

- Services the whole of the UK and has engineers located from Aberdeen to St Austel, to service more than 1500 user sites. The 280 field engineers are trained at a full time training college in Crewe. Each engineer has one month out of each year devoted to training. The engineers work out of 27 field stations and when necessary from home.
- CFM is owned by IAL which in turn is owned by STC and carries a parts inventory worth approximately three million pounds. All the big name machines are serviced but CFM will tackle other equipment.
- Computer Field Maintenance has been established since 1969 and has a charging policy which is reviewed annually. The scheme tailors the charge to the customer's specific needs.

2. FINANCIAL

- CFM's 1983 Revenue turnover is estimated at \$11.9 million. Growth is predicted by CFM management at the rate of 20% per year,. Pretax gross profit is estimated at 8.5% of turnover and the company claims to have always made a profit at TPM. CFM's assets are approximately \$3.8 million.

3. AGREEMENTS WITH SUPPLIERS TO MAINTAIN THEIR EQUIPMENT

- None reported

4. SPARES HOLDING POLICY

- Area distribution backed by head office stores to total value of 3½ million pounds.

5. TYPES OF CONTRACT

- Contracts for routine maintenance and breakdowns, comprehension coverage, various response times to suit user needs at appropriate cost.
- Ad hoc for breakdowns
- Routine maintenance; breakdowns charged time and parts
- Short term standby agreements
- Other types of contract: Any, by special arrangement.

6. LEVELS OF CALL OUT RESPONSE AVAILABLE

- Ad hoc, within hours: Not available

- Contract, within hours: 2,4,8,16,24,48
- These available; 24 hours; 7 days and public holidays
- Engineer works on if on site repairs not completed at end of his shift
- Contracts available with engineers resident on site

7. SERVICE AREA AND CENTRES

- All UK
- 22 nationwide

8. OTHER SERVICES

- Installs systems
- Maintenance management services for large users
- Second user equipment inspection and reports
- Damage assessment for insurance claims
- Decommissioning, recommissioning
- Hardware audits (IBM) only

9. ORGANISATION

- Roger Harris, Managing Director, is extremely knowledgeable about the TPM business and is on the Board and makes regular visits to Kalbro Corporation a TPM firm in New Jersey also owned by IAL. He is very open, sincere and pleasant man.
- CFM is the largest known TPM in the UK and continental Europe as well and have been in

TPM since 1969. They concentrate on "doing one thing well" and carefully select the TPM business matching their skills with customers' needs

10. MARKETING

- CFM has the best range of equipment of all candidates because it includes mainframes as well as peripherals. Already capable of maintaining IBM, CDC, DEC, DG and BCL mainframes could be a good base for other major mainframes.
- Marketing in terms of promotions and reputation is excellent. CFM has a full time sales force selling TPM.

11. JOINT VENTURE/ACQUISITION ATTITUDES

- CFM indicate that they are open minded towards acquisition or joint venture deals and would "welcome" discussions including their parent, IAL.

D. DPCE

6 Broad Street, Wokingham, Berks RG11 1AB.
Tel: Wokingham (0734) 790703 Telex: 849409
Est. 1971. 100% turnover from IM. Parent Co: DPCE Holdings Plc.

1. SUMMARY

- One hundred and fifty different machines are maintained in 300 user sites by DPCE. British Airways and the National Girobank are on the list of DPCE's 55 main customers - 11 of

which have networks totalling more than 500 terminals to be serviced.

- DPCE serves the whole of the United Kingdom and the Netherlands and has been established for thirteen years. About 140 field engineers work for the firm and are trained by DPCE and by individual manufacturers.
- The firm charges customers on an evaluation scheme. This is referred to as 'resource base costing' at DPCE.
- The firm claims the advantage of having charges up to thirty percent lower than those of the manufacturers - and an expertise gained in large installations.

2. FINANCIAL

- DPCE's pro forma estimate for 1983 turnover and profit before tax are \$7.9 million and \$2.1 million (26%) respectively. Previous years' turnover and profit before tax (shown in parentheses) are as follows:

- 1978 :	\$1.3 million	(24.3%)
- 1979 :	1.6 million	(14.5%)
- 1980 :	2.3 million	(21.7%)
- 1981 :	3.7 million	(20.6%)
- 1982 :	5.3 million	(17.5%)
- DPCE went public in July, 1983, with nearly 4 million shares of ordinary stock at \$2.47 per share. This was reported to have been very successful with oversubscriptions.

3. AGREEMENTS WITH SUPPLIERS TO MAINTAIN THEIR EQUIPMENT

- None reported

4. SPARES HOLDING POLICY

- Total spares holding on customers installation where possible. Full inventory for all machines available countrywide.

5. TYPES OF CONTRACT

- Contracts for routine maintenance and breakdowns
- Comprehensive coverage
- Various response times to suit user needs to appropriate cost

6. LEVELS OF CALL OUT AVAILABLE

- Ad hoc, within hours, 2,4,8,24
- Contract, within hours: 2,4,8,24
- These available: 9am-5.30pm, 24 hours, 7 days and public holidays
- Engineer works on if on site repairs not completed at end of his shift
- Contracts available with engineers, resident onsite.

7. SERVICE AREA AND CENTRES

- All UK
- Glasgow, Leeds, Liverpool, Manchester, Coventry, Exeter.

8. OTHER SERVICES

- Installs systems
- Hardware audits
- Consultations
- Site surveys
- Installation planning

9. ORGANISATION

- DPCE's organisation includes an impressive staff of senior management, well balanced in technical, financial and business skills. C. G. Clive, the Chairman, 46 years old, is a former IBM employee and a graduate of MIT and Harvard Business School.

10. MARKETING

- "In the view of the directors, DPCE's present market has considerable potential for development, and new markets are available, primarily in the UK, Europe and the USA. Future growth will come from a wider acceptance of the independent maintenance concept among potential customers and an expansion of DPCE's capabilities in terms of manpower and expertise".
- Prospectus, DPCE Holdings plc July 6, 1983.
- DPCE has a total of 47 contracts in 1983 and tends to put all its eggs in a few baskets. This jeopardises its position in the opinion of a few observers, who say "if DPCE ever lost the British Airways contract they would be in trouble".

11. JOINT VENTURE/ACQUISITION ATTITUDES

- DPCE is very interested in joint venture or merger and is contemplating entering the US TPM market. They would like to talk further about these possibilities.

E. ESCON

Wijnhaven 1026-3011 WV Rotterdam - Holland

Telephone: 010-110207/331077 Telex: 26321

1. SUMMARY

- Escon is in business largely because data general did not have a full service capability in Holland prior to 1976 when escon entered TPM.
- Escon services a wide range of D.G. and other equipment primarily in Holland but with lesser operations in Germany and Belgium.
- They report that the TPM business in Holland is quite good because users are accepting TPM more and more. Escon claims they are doing well because they only sell service whereas competitors such as Datelcare sell hardware as well as service.

2. FINANCIAL

- Revenue Turnover for 1982 was 3 million guilders or about 1.5 million dollars. They declined to provide later figures but it is estimated that their business is growing about 25 per cent per year.

3. OTHER SERVICES

- Installation/deinstallation
- Relocation

- Conversions and upgrades
 - Supplies and Accessories
4. AGREEMENTS WITH SUPPLIERS
- In several cases Escon is the distributor's service agent, especially in micro computers.
5. CONTRACTS
- Very few extra shift contracts - mostly prime shift.
 - Provide 48-hour response and 4-hour response at 15 per cent premium.
6. SERVICE AND CENTERS
- Rotterdam, Amsterdam centers for Holland, Belgium and Germany.
7. ORGANISATION
- 4 Departments: instrumentation, minis, micros, and peripherals.
 - Service manager, 4 supervisors, engineers (20) general director, technical director, and financial director.
8. MARKETING
- Escon's marketing efforts are not particularly aggressive or impressive.
9. JOINT VENTURE
- Escon is not interested in joint venture or acquisition at this time.

F. GCS

13 Mount Road, Hanworth, Feltham, Middx TW13 6JG.
Tel: 01-898-5251 Telex: 8955177
Est. 1969. 100% Turnover from Parent Co. GCS Ltd.

1. SUMMARY

- Two, four and eight hour on-site reponse services are available from GCS Engineering. The firm specialises in minis, micros and peripherals - and is the approved maintenance company for Apple, Osborne and Corvus.
- By the end of 1984 the company expects to have 40 walk-in repair shops operating in mainland Britain. User sites run into several thousand - and service is provided by 130 field engineers. GCS says its engineers spend 15 per cent of their time training at the company's training centre in Manchester.
- Set up in 1969, the firm claims to offer a completely personal service - tailoring to the customer's needs.

2. FINANCIAL

- Revenue turnover for 1983 is estimated at \$5.8 million with a gross profit before tax of 14%. Subsequent revenue projections with accompanying gross profit before tax in parentheses are as follows:
 - 1984 : \$8 million (15%)
 - 1985 : \$9.7 million (16%)
 - 1986 : \$12.0 million (17%)
- GCS feels that 18% is the maximum gross profit before tax, owing to the following:
 - Critical mass
 - Nature of TPM market
 - Competition

3. AGREEMENTS WITH SUPPLIERS TO MAINTAIN THEIR EQUIPMENT

- Apple (UK) - complete range of Apple products
- Computer Automation Omnix, Alpha 16
- Elbit Data Systems - complete range of Elbit products
- Gemini Micro computers - Gemini, Quantum
- Internet SDS
- Keen Computers - Corvus Concept, Corvus disk
- NEC - PC8000
- Osborne Computer Corp (UK) - Osborne
- TDI - Sage computer

4. SPARES HOLDING POLICY

- 80% held at service centres, 20% at central stores

5. TYPES OF CONTRACT

- Ad hoc for breakdowns
- Routine maintenance; breakdowns charged time and parts
- Fixed price plus cost of parts
- As above; repair within guaranteed time
- Short term standby agreements
- Other types of contract: Tailored contracts to clients requirements.

6. LEVELS OF CALL OUT AVAILABLE

- Ad hoc, within hours: 24
- Contract, within hours: 2,4,8,24,48
- These available: Prime shift, shift and a half, Monday-Friday, Saturday and public holidays by arrangement.

7. SERVICE AREA AND CENTRES

- Mainland UK
- London, Basildon, Bristol, Birmingham, Northampton, Manchester, Shetfield, Airdie

8. OTHER SERVICES

- Installs systems
- Advice and sales of import/export
- Environment
- Equipment relocation
- Configuring, delivery and installations
- Training of maintenance engineers.

9. ORGANISATION

- Bill Nickoll, Managing Director, Nick Swallow, Chairman and 3 others hold 51% of the stock in GCS Engineering Ltd a subsidiary of GCS Ltd. An investor holds the remaining stock. Bill is a known "expert" in TPM and has written several articles and was even interviewed on London radio recently. He is probably the best TPM business man in the industry and has developed a very good marketing program.

10. MARKETING

- GCS markets TPM better than any other competitor in Europe and perhaps in the US as well. Promotional themes stressing "independent" rather than "third-party" and flexibility to meet the customers' needs have proved helpful in sales campaigns.
- GCS's "exclusive" maintenance deal for Apple in the UK is working out very well and other manufacturers are expected to choose GCS as their service agent in the near future.
- One apparent weakness in GCS is its lack of pursuit of mainframe business.

11. JOINT VENTURE/ACQUISITION ATTITUDES

- GCS is an excellent candidate for merger or a joint venture in Europe. Preferably, they would like to sustain the UK business themselves.

G. KODE

Station Road, Calne, Wilts SN11 0JR.

Tel: Calne (0249) 813771 Telex: 449335

Est. 1974 90% Turnover from IM Parent Co: Kode International Plc.

1. SUMMARY

- Services a wide range of equipment including paper punches, vdu's, terminals, micros and minis. The company serves the whole of the United Kingdom with 3000 user sites being covered by a front line of 100 inhouse training field engineers.
- Formed as an independent company in 1974, Kode Services charges on an evaluation scheme which

accounts for the equipment to be serviced, the likely costs of labour and parts, and past experience.

- Kode also has a Winchester disk repair service with its own clean room which services the whole of Europe. The disk service has received enquiries, and on occasion serviced equipment from Finland, South Africa and New Zealand.

2. FINANCIAL

- Kode Services estimated 1983 revenue turnover is approximately \$5 million at a gross profit before tax of 20%. Earlier figures include (gross profit before tax in parentheses):
 - 1982 : \$6.6 million (19.8%)
 - 1981 : 3.7 million (16.8%)
- Net assets were \$1.5 million and \$1.2 million for 1982 and 1981 respectively.

3. AGREEMENTS WITH SUPPLIERS TO MAINTAIN THEIR EQUIPMENT

- Anadex Printers - DP 8000, DP 9500/1, DP 9600, WP 6000
- Data Transfer for Delpha Systems 1020
- GNT Automatic (UK) - Paper tape punches 3601, 3602, 4601, 4602, 4603
- Lear Siegler Terminals ADM 3A, AD, 31
- OKI Microline Printers 80, 82A
- Pertec XL 20 & 40 systems

- Qume printers 3, 5
- Research machines - all: Teletype 40,43,33, Transtel - all
- Vector Graphic Microprocessor Systems - all

4. SPARES HOLDING POLICY

- Comprehensive stocks of spares held at all of our eight depots throughout the UK. In addition our field engineers hold a very good range of spares which are replaced as used.

5. TYPES OF CONTRACT

- Ad hoc for breakdowns
- Other types of contract: Return to Depot maintenance/repair contracts.

6. LEVELS OF CALL OUT RESPONSE AVAILABLE

- Ad hoc, within hour: 48
- Contract, within hours: 2,4,8,24,48
- These available: Prime shift; Monday-Friday.
- Engineer works on whenever possible if on site repairs not completed at end of his shift.
- Contracts available with engineers resident on site.

7. SERVICE AREA AND CENTRES

- All UK, Europe
- Chessington, Maidstone, Birmingham, Bristol, Rochdale, Falkirk, Belfast, Dublin.

8. OTHER SERVICES

- Kode Services Ltd are the UK, Scandinavian and European disk repair agency for Kennedy Inc., IMI, CMI and Seagate Technology. Winchester disk drive electronic and HDA repair is available at Caine depot in Class 100 clean room which confirms with the Federated Standards 209B.
- Also sells spares and media.

9. ORGANISATION

- John May, Managing Director, resigned in early 1983. Murray Dolan, formerly of CFM was recruited to fill the vacancy. Because of the lengthy time involved in the changeover, the company may have suffered slightly.

10. MARKETING

- Kode has a respectable customer base including the exclusive maintenance agreements for printer and terminal manufacturers.

11. JOINT VENTURE/ACQUISITION ATTITUDE

- Prospects for teaming with Kode are remote as they are apposed to a merger and only luke warm regarding a joint venture.

H. MAINSTAY

Bamford Grange, Adswood Road, Stockport, Cheshire.
Tel: 061-477 5825 Telex : 668365
Est. 1981. 100% turnover from IM

1. SUMMARY

2. FINANCIAL

- Mainstay's 1983 revenue turnover was \$1.1 million with a pretax profit of 2% on turnover. This reflects their newness to the TPM market. Their own projections for the future are as follows (gross profit before tax shown in parenthesis):
 - 1984 : \$2.2 million (13.1%)
 - 1985 : 3.8 million (19.2%)
 - 1988 : 6.1 million (21.4%)
- Assets are currently estimated at \$2.8 million.

3. AGREEMENTS WITH SUPPLIERS TO MAINTAIN THEIR EQUIPMENT

- IMN PC; Tecmar - PC-Mate ranges of IBM add-ons

4. SPARES HOLDING POLICY

- All embracing - machines, components and boards.

5. TYPES OF CONTRACT

- Fixed price plus cost of parts

6. LEVELS OF CALL OUT RESPONSE AVAILABLE

- Ad hoc, within hours: Not available
- Contract, within hours: 24
- These available : 24 hours; Monday- Friday
- Engineer works on if on site repairs not completed at end of his shift.

7. SERVICE AREA AND CENTRES

- All UK
- Stockport

8. OTHER SERVICES

- Supplies and installs systems and will upgrade them

9. ORGANISATION

- Organised in 1980, Mainstay has organised well and comprises several former IBM employees who are shrewd businessmen and technically capable.
- Geoff Henderson, Managing Director, is a very articulate and clever TPM entrepreneur who will surely be successful.

10. MARKETING

- Mainstay is one of the most aggressive TPM marketers within their specialty which currently is IBM GSD Computer equipment.

11. JOINT VENTURE/ACQUISITION ATTITUDE

- Mainstay's overriding objective is to maintain control but they would be interested in part ownership depending on price"

I. MILLS

Wonastow Road, Monmouth NP5 4YE.

Tel : Monmouth (0600) 4611 Telex : 498306

Est. 1970. 50% turnover from IM

1. SUMMARY

- Specialises in business systems and peripherals including Zilog computers and NEC printers. Mills has been independent for the past 12 years - but maintained equipment for eight previously as a subsidiary of a parent company.
- England and Wales are covered, and Scotland as far north as Dundee with 1500 user sites presently on the books. The 60 field engineers are trained by Mills at its training school and receive external training when necessary.
- Two types of service are available. Field maintenance operates on a contract scheme, for 24 or 72 hour fast response. Workshop repair offers a fixed price based on parts used and equipment collection and delivery.

2. FINANCIAL

- Mills' estimated revenue turnover for 1983 is slightly under \$5 million. Prior year's performance including profit before tax (figures in parentheses) are as follows:
 - 1982 : \$5.1 million (2%)
 - 1981 : 4.7 million (2%)

3. AGREEMENTS WITH SUPPLIERS TO MAINTAIN THEIR EQUIPMENT

- Commodore - all models;
- NEC Spinwriter printers
- Zenith - all models

- Zilog MCZ1, ZDS, S8000 ranges
 - SGS UX16, UX8 range
4. SPARES HOLDING POLICY
- Computerised stock system
 - Spares held at locations throughout UK
5. TYPES OF CONTRACT
- Ad hoc, for breakdowns
 - Routine maintenance; breakdowns charged time and parts
 - Fixed price plus cost of parts
 - As above; repair within guaranteed time
 - Short term standby agreements.
6. LEVELS OF CALL OUT RESPONSE AVAILABLE
- Ad hoc, within hours: Not available
 - Contract, within hours: 4,24,28
 - These available: Prime shift, shift & and a half, 7 days
 - Engineer works on or returns next working day if on site repairs not completed at end of his shift
7. SERVICE AREA AND CENTRES
- All except N. Scotland and N. Ireland
 - Monmouth, Birmingham, Ilford, Chertsey, Cardiff, Swansea, Nottingham, Manchester, Newcastle, Edinburgh.

8. OTHER SERVICES

- Installs systems
- Enhancements, upgrades,
- Refurbishment of mainframe systems
- Independent inspection of used equipment
- Site and environmental planning

9. ORGANISATION

10. MARKETING

- Mills' marketing efforts are somewhat obscure. However, Managing Director, John Gould, is the Chairman of the CSA TPM interest group which is doing a good job for promoting TPM.

11. JOINT VENTURE/ACQUISITION ATTITUDE

- The fact that Mills has refused to be interviewed in this and previous TPM research would state that they feel very independent and unattracted towards merger or joint venture. Reliable sources substantiate this.

J. NEXEL

1. SUMMARY

- Office and numeric control systems are maintained as an after sales service. Third party servicing is available on a contract scheme. Word processors, personal computers and printers are specialities.
- Eight field stations around the country provide a nationwide service to 550 sites.

- The contract scheme for third party servicing involves a contract signed with the manufacturer. Nexel subsequently maintains and services equipment when necessary. This scheme is currently available from eight manufacturers - including Logica and Fortune.

2. FINANCIAL

- Nexel's financial figures are not disclosed as they are privately held, but it is estimated that their annual turnover is less than \$1 million.

3. ORGANISATION

- Nexel was financially reorganised in April 1982 with Trevor Lafferty as Managing Director.
- Nexel has created the position of "New Business Director" (Gary Driver) reflecting the need to expand into new markets.

4. MARKETING

- Marketing is limited. Products maintained include:
 - Nexos
 - Ricoli Printers
 - Logisa VTS
 - Fortune
 - Quorun
 - Unicon
 - ICL DRS8801

5. JOINT VENTURES/ACQUISITION ATTITUDE

- "Not in any way that would undermine (our) independence".
- Too small.

K. SMS

1. FINANCIAL

- SMS's revenue turnover is approximately \$3 million for 1983, but officials declined to say despite the fact that SMS is a public company. Previous performance is as follows:
 - 1981 : \$1.6 million - Profit before tax = \$36k loss
 - 1980 : \$1.5 million - Profit before tax = \$280k loss

2. ORGANISATION

- SMS is very keen on expanding into Europe and has previously attempted European TPM, unsuccessfully. The failure was due to SMS not using local nationals, rather attempting to impose British management and technicians in each foreign market.

3. MARKETING

- SMS currently has a good marketing philosophy and is reasonably aggressive about rebuilding their TPM bases in Germany, France, Benelux and Switzerland. The stigma of the previous failure may hurt them.

4. JOINT VENTURE/ACQUISITIONS ATTITUDE

- SMS, upon learning the nature of the interview, refused to continue which is a sure signal that they are interested in pursuing TPM in the UK and Europe by themselves.

L. THIJSSSEN FIELD SERVICE

7370 AA Loenen (Gld)
Postbus 31
Hoofdweg 60 Netherlands
Telephone: 5765-1155

1. SUMMARY

- Thijseen is a smaller company, about 1 million dollars annual turnover with about 15% gross profit and about 130 accounts most of whom are DEG users. Well managed.

2. JOINT VENTURE/ACQUISITION ATTITUDE

- Thijssen is not very keen to enter a joint venture or major discussion.

M. VOLLWOOD

Vollwood Computer Service
Frankfurter Alle 1-3
6236 Eschborn
Telephone: 6196 70120

1. SUMMARY

- Vollwood is a relatively diversified organisation with hardware sales and leasing teleprint and service divisions in Germany, England, Switzerland, Austria, Netherlands and U.S.A.
- Service divisions exist in Germany, U.S.A., and Netherlands.

- They maintain a variety of printers, small systems and telex equipment and have been in TPM since 1980.
2. FINANCIAL
- Vollwood currently does about 3.5 million dollars in TPM which includes over 1 million in spare parts sales.
 - They claim a 15 per cent growth rate and are getting into micro computer service.
3. AGREEMENTS WITH SUPPLIERS
- Like Escon in Holland, Vollwood are selling micro service to distributors.
4. CONTRACTS
- Offer a less than 1-hour board swap and guaranteed 24-hour response time. Very little need for extra shift coverage. Also have a 2 and 4-hour response at a premium.
5. SERVICE CENTRES
- Berlin, Gottingen, Hamburg, Siegen, Mannheim, Munchen, Nurnburg, Friburg.
 - U.S. Office; P. O. Box 222, 325 Boston Post Road, Wayland MA01778.
Telephone: 617-358-5216, Telex: 948345
6. OTHER SERVICES
- Spare part sales
 - Installation/deinstallation
 - P.M.
7. ORGANISATION
- German company "went broke" in 1981 because of a family quarre. 55 service engineers, 2

field specialists and 3 managers.

8. MARKETING

- Vollwood is good at marketing their TPM and has an impressive brochure and price list (all in German). They claim that DEC customers are getting fed up with the policy that DEC won't maintain other MFG's equipment and this has boosted their marketing advantage. They claim to have no national competition and only a small amount on a regional basis. They believe that the German TPM market will rapidly grow as U.S. and U.K. TPM has grown. They understand the DEC and COC are exploring TPM in Germany. Vollwood is getting a much larger volume of enquiries for TPM than they had in the past.

9. JOINT VENTURE/ACQUISITION ATTITUDE

- Vollwood is acquiring smaller TPM's on a case by case basis but is very anxious to find a partner(s) to respond to multinational service requests in Italy, Austria, France and Scandinavia.

IV USERS AND PROSPECTS - TPM

A. DEMOGRAPHICS

- Exhibits IV-1 to IV-10 provide demographics for TPM users and prospects. Typically they are:
 - Either in manufacturing or services
 - Employ between 500 and 1000 workers
 - Have annual maintenance budgets between \$11 and \$25 per year.
- A few users had been using TPM for up to .5 years, with the average period of TPM usage being 3.2 years.
- Since most of the current users had been using TPM for a relatively long time period (5-10 years), the credibility and significance of the results of the survey appeared to be quite high.
- There was a wide range of TPM suppliers. Two users were using more than one TPM supplier.
- The choice of TPM supplier appeared to depend on
 - which TPM supplier was recommended by the manufacturer - for example DEC tend to operate closely with TPM companies.
 - The availability of maintenance from the manufacturer e.g. Vector and Elbit did not provide maintenance.
 - User acceptance of the cost of maintenance charged by the manufacturer.
 - The availability of TPM services in the geographical region of the user.
- In general users were satisfied with their TPM services and described them as "good" and "adequate". These rep-

EXHIBIT IV-1

Type of Company
As TPM User or Prospect

<u>Type of Industry</u>	<u>Percent of Sample</u>
Manufacturing (including distributors, food processors, breweries)	41%
Services (retail, newspapers) (restuarants & hotels, publishing, television etc.)	39%
Financial (insurance, banks)	11%
Education	9%
	<hr/>
	100%

EXHIBIT IV-2

Size of Company
As TPM User or Prospect

<u>Number of Employees</u>	<u>Number of Respondent Companies</u>
More than 1000	16%
500 - 1000	34%
300 - 499	18%
100 - 300	25%
Less than 100	7%
	<hr/>
	TOTAL 100%

44 Respondents

EXHIBIT IV-3

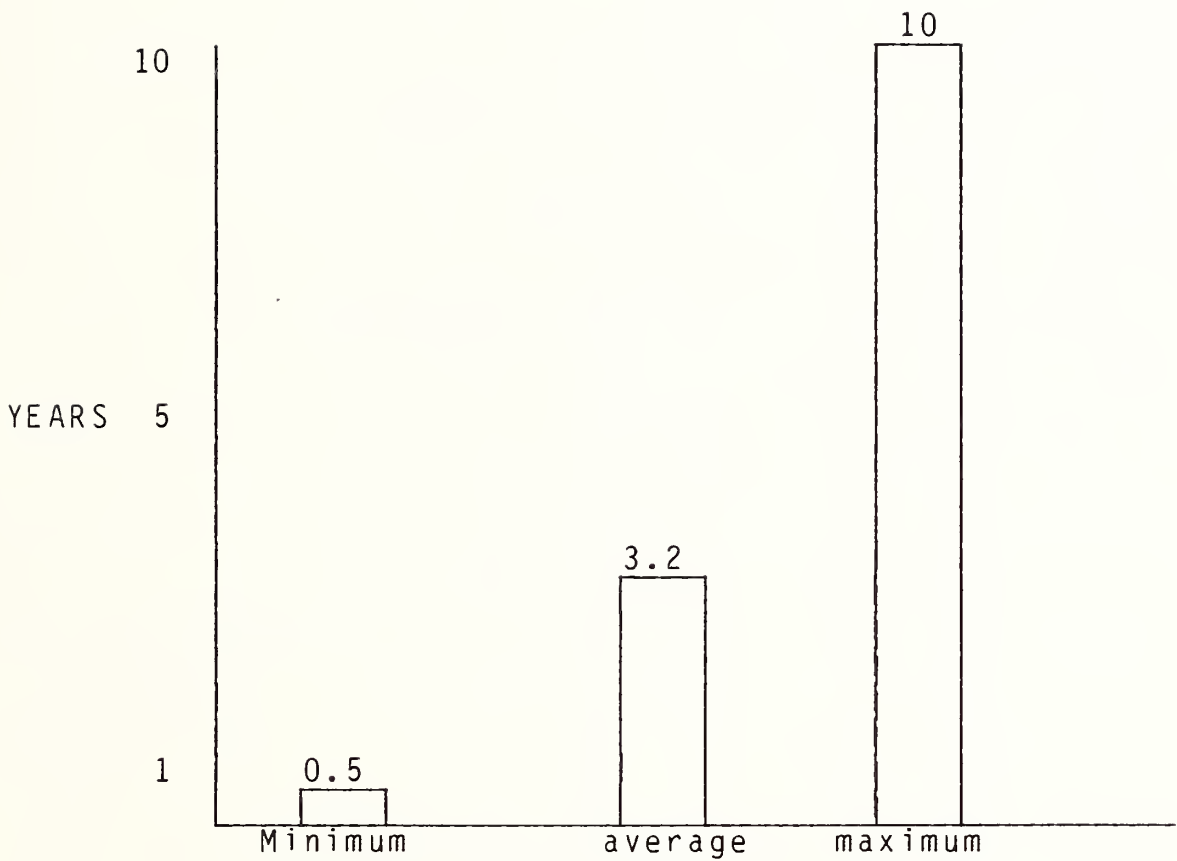
Size of 1984 Maintenance Budget TPM Users and Prospects

<u>Size of Budget</u> <u>(£000 Annual)</u>	<u>Number of Respondents</u>
Over 100	8%
51 - 100	16%
25 - 50	22%
11 - 25	32%
1 - 10	22%
	<hr/>
	Total 100%

37 Respondents

EXHIBIT IV-4

Length of TPM User



"How Long Have You Been Using TPM?"

Response:13

EXHIBIT IV-5

Providers of TPM

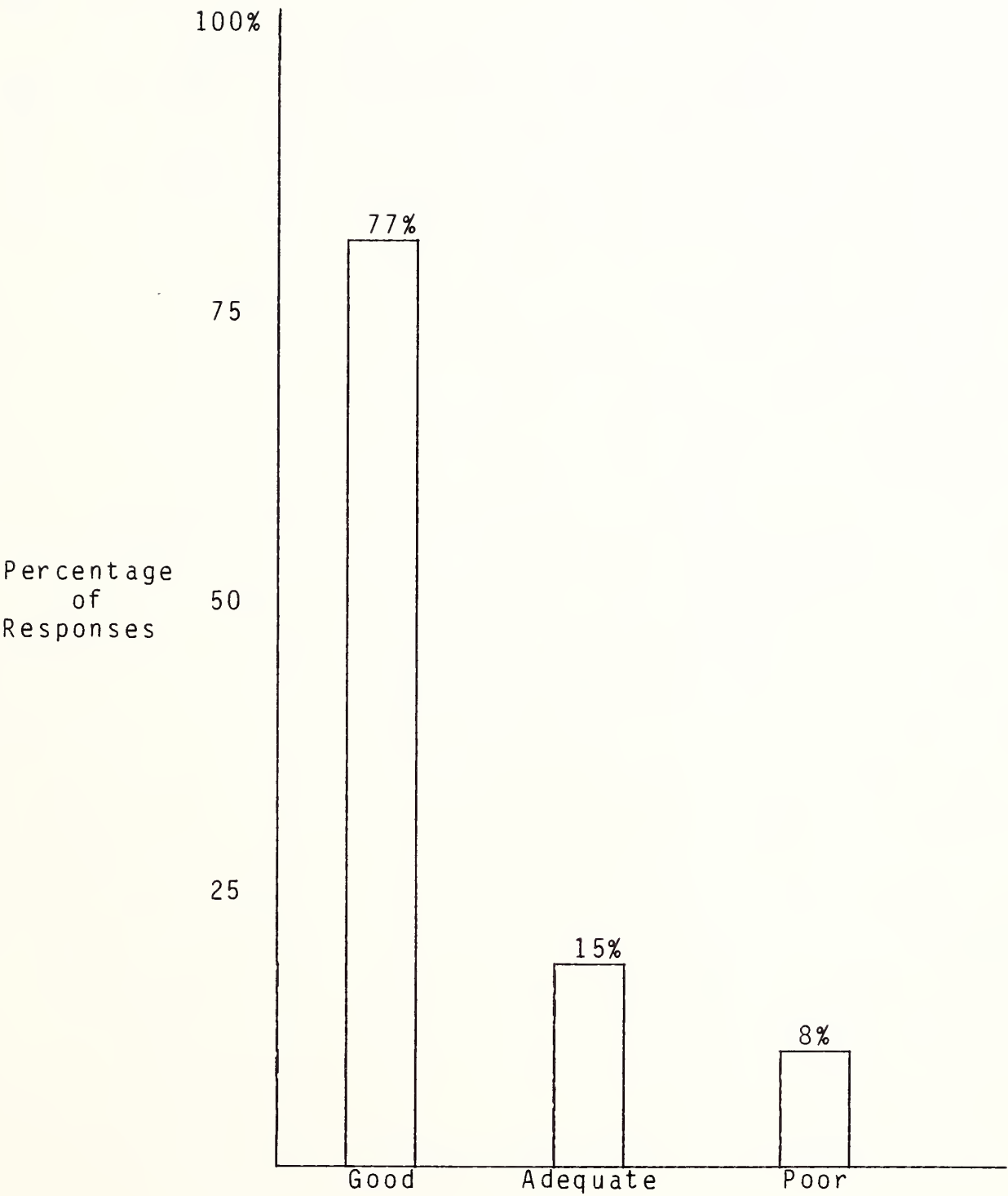
- . Kode
- . SMS
- . Aquarius
- . CFM (2 mentions)
- . Hamilton
- . GCS
- . Pericom (2 mentions)
- . CIL
- . Mills
- . Middletron
- . TSS
- . DDT

"Who Provides Your TPM?"

Responses: 13

EXHIBIT IV-6

Quality of TPM Service



"Is your TPM Service Good, Adequate or Poor?"

Responses: 13

EXHIBIT IV-7

"What Problems Are You Experiencing with TPM?"

* None	40%
* Other (Installation Pricing,, Finger- pointing, Poor Availability	30%
* Poor Response Time	15%
* Incompetent Technicians	15%

Responses: 13

EXHIBIT IV-8

"Do You Intend to Continue Using TPM?"

* Yes 90%

* No 8%

Responses: 13

EXHIBIT IV-9

"Would You Consider Using Another TPM
Vendor As an Addition to or Replacment
of Your Current TPM Vendor?"

- * Replacement 62%
- * No 31%
- * Addition 7%

Responses: 13

EXHIBIT IV-10

"What Are Your Principal Reasons
For Using TPM?"

- * Cost 43%
- * Manufacturer Doesn't Offer Service .. 29%
- * TPM Service is Better Than
Manufacturer's 28%

Responses: 12

sponses were made by 92% of the sample.

- Only 8% of the users were dissatisfied with the TPM service. They mentioned poor availability of maintenance services and complained about the incompetence of the TPM technicians.
- 40% of the users had experienced no problems with TPM.
- Poor response time and incompetent technicians were each mentioned by 15% of the TPM users.
- 30% of TPM users referred to a range of problems which included:
 - The high cost of installing equipment
 - High maintenance charges
 - Poor service availability
 - Problems with determining which company was responsible for maintenance when TPM suppliers and manufacturers provided maintenance services for the same site.
- In total 60% of the users had experienced problems with TPM. However since 92% of those users described their TPM services as good or adequate it appeared that users were sympathetic to many of the maintenance problems.
- Users were keen to continue using TPM despite the problems which some had experienced.
- 92% intended to continue using TPM and only 8% did not intend to continue using TPM.
- The main reasons for not continuing with TPM highlighted the problems of a French user who had the misfortune to employ a TPM company which operated from a UK base and which employed non-French speaking engineers.
- As a result response times, the quality of service and user TPM engineer relations were very unsatisfactory.

- 62% of the sample stated that they would be prepared to consider another TPM vendor as a replacement for their current TPM vendors as a replacement for their current TPM vendor. 7% would consider another TPM vendor in addition to their current TPM supplier.
- The interviewee's preference for replacement of their current TPM vendor raised two issues:
 - The preference suggested that users' tended to prefer single source maintenances.
 - The users' readiness to replace their current TPM suppliers suggested that users could be dissatisfied with their current service. That was inconsistent with the findings that 92% of the sample described their TPM service as good or adequate.
- It seemed possible that users envisaged continuous evaluation and reassessment of their TPM requirements and would readily change suppliers if they considered it necessary to do so.
- One result of such user attitudes could be development of a highly competitive TPM marketplace.
- 31% of users stated that they would not consider the use of another TPM vendor. Those were mainly users who described their TPM services as "good".
- The responses were intended to give an indication of the factors which would motivate the interviewees to use TPM.
- Cost was the most significant factor and was mentioned by 43% of TPM users.
- 29% of users were forced to use TPM because the manufacturers did not provide maintenance services.
- 28% of users would use TPM if the TPM service were better than that provided by the manufacturers.

- The above results were similar to the motivating factors expressed by potential TPM users who also emphasised cost savings and better quality of service.

B. TPM SELLING POINT

- The interviewees indicated that the principal selling point for TPM would be the cost of the service with 27% of the sample noting this point (Exhibit IV-11).
- These interviewees would expect the TPM service to competitively priced and to offer significant cost savings compared with the existing maintenance charges.
- Some interviewees felt that a minimum of 25% cost savings would be required to induce them to use TPM and to compensate for the risk which they felt they would be taking in using a TPM company.
- The second most important selling point noted by 13% of the sample was that interviewees would expect the TPM company to provide a better quality of service than the manufacturers and also to charge less for that service.
- The remaining selling points related to the practicalities of providing an improved high quality maintenance service. The major concerns of the interviewees were assured responsiveness, reliability and spares availability which were mentioned by 8%, 5% and 5% of the sample respectively.
- To ensure that these criteria were met, interviewees felt that the TPM should be well established and in a position to negotiate with manufacturers about spares' availability and how their maintenance contracts could complement each other.
- The interviewees also felt that the improved service should include telephone support; 24 hour service local

EXHIBIT IV-11

"What Would It Take To Sell You on TPM?"

<u>Selling Point</u>	<u>Percent of Mentions</u>
Better Cost Than Manufacturer	27%
Better Service Than Manufacturer	13%
Assured Responsiveness	8%
Assured Reliability	5%
Spares Availability	5%
Relationships (negotiations) with Management	3%
Established or Experienced Firm	3%
Other:	
Telephone support	
24 hour service	
Quality	
Location	
Effectiveness	
Installation	36%
	<hr/>
TOTAL	100%

Responses: 41

service centres: effective, high quality maintenance and the installation of equipment.

C. WILLINGNESS TO EXPERIMENT USING TPM

- Interviewees expressed an understandable wariness about using TPM for part of their system. Exhibit IV-12.
- 48% of the responses were negative and of those interviewees which qualified this response the main concerns were:
 - preference for single source maintenance
 - the fact that a TPM contract would invalidate the existing contract with the manufacturer for the mainframe computer
 - difficulties in separating the components of the system and having separate maintenance contracts
 - the unsuitability of the installation for TPM due to a low volume of terminals or the use of non-standard terminals.
- However 40% of the sample were prepared to try an experiment using TPM for part of their systems and a further 12% would be prepared to do so if certain criteria were met.
- Those criteria included the cost, quality and reliability of the service.
- Thus it appeared that a potential TPM supplier which satisfied those criteria could capture up to 52% of the market for maintenance.

D. EQUIPMENT FOR TPM

- The products which interviewees considered most suitable for TPM were terminals and printers which were mentioned

EXHIBIT IV-12

"Would You Be Willing To Try An Experiment
Using TPM For Part of Your System?"

* No	48%
* Yes	40%
* Maybe	12%

Responses: 42

by 27% and 19% of the sample respectively, as shown in Exhibit IV-13.

- Interviewees also considered disks and minis fairly suitable for TPM with 18% of the sample noting those products.
- 12% of the sample were prepared to consider TPM for the mainframe or CPU.
- Microcomputer, VDUs and telecommunications products were in the range of 6% - 9% of the sample.
- The interviewees' preference for using TPM for terminals and printers could possibly be explained by their comments that:
 - The cost of maintenance charged by manufacturers for terminals was considered to be high when the purchase price and reliability of terminals was taken into account.
 - For most of the interviewees terminals were not 'critical' and the perceived risks involved in using TPM were fairly low.
- Interviewees were prepared to use TPM for non-critical terminals and terminals at remote sites. If the TPM service was approved in a controlled situation the interviewees would possibly transfer to TPM for other more critical equipment such as the mainframe given that the TPM company was capable of servicing the mainframe.
- One interviewee pointed out that he would only use TPM for the mainframe since he expected that the TPM supplier would have to refer to the in-house d.p. personnel and they were only located in the building where the mainframe was situated.

E. MULTIPLE LOCATIONS

EXHIBIT IV-13

"Which Equipment Would You Consider Using TPM?"

* Terminals	27%
* Printers	19%
* Other Disks, Minis	18%
* Mainframe or CPU	12%
* Micros	9%
* VDU	9%
* Telecommunications/Communications	6%

Responses: 22

- 29% of the sample had only one location and of the remaining 71% 44% were prepared to use TPM at more than one location and 12% felt that they "might" do so. (Exhibit IV-14)
- Very few users (15% of the sample) would not use TPM at more than one site and of those who qualified their response the reasons were:
 - High reliability of remote terminals and consequently low call out rate would not justify the cost of TPM.
 - In house capability for maintenance of microcomputers.
 - Unsuitability of TPM for remote sites which had wide variations in maintenance requirements. The current maintenance arrangement for those sites was "ad hoc support".

F. IDEAL TPM COMPANY ATTRIBUTES

- A well trained and competent force of engineers was considered by most interviewees to be the most important attribute of a TPM company. It received a high rating of 1.4 on a scale of (1)-(6) where (1) signified the most important attribute and (6) signified the least important. (Exhibit IV-15.)
- The geographical location of the engineer and/or service centre was considered to be the second most important attribute with a rating of 2½. Interviewees stressed this attribute noting how it could effect response times.
- In general interviewees required high levels of response eg 2 hours minimum. It was noted that the existence of a nationwide network and having engineers on radio call could facilitate the required response times.

EXHIBIT IV-14

"Would You Eventually Consider TPM at
More Than One Location Assuming You
Have More Than One Site?"

* Yes	44%
* Not Applicable	29%
* No	15%
* Maybe	12%

Responses: 41

EXHIBIT IV-15

"....Please Rank Attributes (of a TPM Company)
In Terms of Importance to you"

1=most important, 6=least important

<u>Rank</u>	<u>Average</u>	<u>Attribute</u>
1	1.4	Has well Trained Engineers
2	2.0	Geographically Near Your Site
3	2.2	References For Successful Operation
4	2.3	Has Close Relationship to Manufacturer
5(tie)	3.0	Large Well Known Firm
5(tie)	3.0	Provides Service With a Personal Touch

Responses: 50

- Interviewees also gave the existence of a close relationship between the TPM supplier and the equipment supplier a high rating of 2.3. The ability of the TPM to have a skilled engineer on-site within the required response time would be negated if the TPM were unable to provide spares for the equipment.
- Interviewees were particularly concerned about the availability of spares and the ability of the TPM companies to make agreement with manufacturers which would ensure cooperation between them.
- References for successful TPM operations received a rating of 2.2 from interviewees and emphasised how essential that attribute was to the credibility of a TPM supplier. One interviewee wanted to be able to go to reference sites personally in order to check them out.
- Interviewees gave "large well known firms" a rating of 3 and expressed concern about the reputation and financial stability of the TPM companies.
- Services with a personal touch" also received a rating of 3. The TPM engineer should build up a good relationship with users in order to gain and maintain their confidence in the TPM company. Some interviewees stressed the importance of engineers being approachable and having good personnel skills and giving guidance on inhouse minor repairs. It was also noted that "Service with a personal touch" could not compensate for lack of professionalism and competence.

G. IDEAL TPM SERVICE ATTRIBUTES

- The principal service attributes according to the survey were "guaranteed spare parts availability", "economical" and "good diagnostics and test equipment" which were rated 1.6, 1.8. and 1.9 respectively. Exhibit IV-16.

EXHIBIT IV-16

"....Please Rank Attributes (of TPM Services)
In Terms of Important to You"

1=most important, 6=least important

<u>Rank</u>	<u>Average</u>	<u>Attributes</u>
1	1.6	Guaranteed Spare Parts Availability
2	1.8	Economical
3	1.9	Good Diagnostics and Test Equipment
4	2.6	Flexible
5	3.2	Ability to Maintain Mixed Systems
6	3.6	Software Support Capability

Responses: 50

- In addition to receiving a high quality, cost effective service from TPM suppliers, interviewees want assurance that TPM suppliers have access to an adequate supply of spare parts.
- Field service revenues have become increasingly important to manufacturers and some have reacted to the competition from TPM companies for those revenues by limiting access to spare parts and advising users against TPM. This appeared to be a serious obstacle to interviewees' willingness to use TPM.
- Flexibility was also considered to be an important attribute of TPM service. Interviewees were interested in having both flexible service options (eg onsite callout, walkin-in, mail-in and collection) and flexible methods of payment (eg hardware maintenance contracts, ad hoc time and materials etc.)
- Interviewees considered the ability of TPM companies to maintain mixed systems to be a fairly important service attribute (rating 3.2).
- The interviewees had two definitions of "mixed systems":
 - Systems composed of products from various manufacturers
 - Systems incorporating telecommunications facilities in addition to hardware and software.
- Most interviewees used the definition of mixed systems as products from different manufacturers.
- It appeared that the ability of TPM companies to maintain mixed systems as described above was a major determinant of the market share potential for TPM companies, especially in view of the trend for diverse office products to be linked together in local area networks.

- Software support capability was rated 3.6 by interviewees, and could be very problematic for TPM companies, not only from the viewpoint of the cost involved in providing software maintenance but from the viewpoint of monitoring software changes. Where TPM companies, inhouse programmers and software houses are involved in software maintenance and upgrades etc., very close cooperation will be required between them.

H. OTHER ATTRIBUTES OF TPM COMPANIES AND SERVICES

- 52% of those who mentioned "other" attributes referred to response times. Guaranteed response times were considered important with a maximum of 1-2 hours response for U.P.U.s and serious problems. There was a certain flexibility for v.d.u response times but overall users had high expectations. They required faster response times if their sites were located close to the TPM service centres, irrespective of the repair priority. (exhibit IV-17).
- One interviewee commented that response times could be improved if engineers were more easily obtainable by being on radio call.
- Full cover and cost were each noted by 7% of the interviewees who mentioned 'other attributes'.
- The referring to cost the interviewees expressed requirements for cost savings and cheaper rates than those quoted by manufacturers without reductions in the service quality.
- The remaining 34% of interviewees who mentioned 'other' attributes referred to a wide range of attributes. This included;
 - The ability of the TPM company to install and decommission equipment.

EXHIBIT IV-17

"Other Attributes (of importance in terms
Of either a TPM Company or TPM Service)"

- * Response Time 52%
- * Other Contracts, Repair Time,
Research & Development, Eng-
ineering Time 34%
- * Full Cover 7%
- * Cost 7%

Responses: 26

- The ability of the TPM company to satisfy the normal requirements of the manufacturers' maintenance regarding engineering updates.
 - The ability of the TPM company to keep up to date with technology changes through ongoing Research and Development.
 - TPM service policies should aim to ensure that engineers would service specific sites and maintain close relationships with users.
 - Engineers working in Europe or other foreign countries should be competent in the languages of those countries.
 - TPM service policies should assure users of their management stability and commitment to continue to maintain certain manufacturers' products.
 - TPM companies should pay attention to flexible methods of charging for maintenance and possibly offer combinations of fixed price contracts and ad hoc charges.
 - Interviewees were concerned about repair times and the availability of spare parts.
- Exhibit IV-18 is a selection of users' comments regarding TPM.

EXHIBIT IV-18

Comments on How TPM Services Could be Improved or Made More attractive to users

- . "TPM must offer significant cost reduction to justify the perceived risk of non proven services".
- . "Location is not so important".
- . "How is relationship between user and supplier affected if user employs TPM?".
- . "Like to see cost reduction (in service)".
- . "(TPM) must be proven in operation".
- . "One drawback of TPM is lack of response time".
- . "Flexibility and willingness to provide customised service".
- . "(Need) fast response (2 hours) from TPM service".
- . "Main problem is protectionism of manufacturers".
- . "TPM has to offer something extra: better response, commitment to follow through, prove worth, undertake maintenance of odd parts of the installation".
- . "Difficult for users to influence TPM market. Depends on policy of manufacturer".

Responses:19

V MANUFACTURERS AND MERCHANTS TPM

- Twenty-nine (29) manufacturers were asked about their own participation in TPM, in terms of providing it and also with respect to supporting an independent TPM with resources to service the manufacturer's equipment. Several manufacturers also have dealer or distributors representing them, particularly in the smaller product categories.
- The companies interviewed were representative of the market in terms of area and products, as shown in Exhibit V-1.
- Within a very tight time constraint, an advertisement in "Computing" a weekly publication with circulation of 127,000 was selected as the most effective approach to researching manufacturing and distributor prospects for TPM. (Exhibit V-2) There is no response as yet.

A. BELL & HOWELL

- Has publicly announced entry into TPM, but their business planner, R. Bernholt, didn't offer too much. They want to approach microfilm/microcomputer TPM market and are currently "under negotiation" with other companies to do TPM.

B. CDC

- Expect to do 527K pounds in 84 TPM. Total turnover 6 million pounds. Mostly DEC equipment. Entered TPMN business for revenue growth and for total support of CDC customers. Expect TPM to grow 20 percent per year. CDC bought systime in '83. Systime was in TPM. Would reluctantly provide sources to an independent TPM for CDC equipment.

C. CENTRONICS

EXHIBIT V-1

Respondent Manufacturers and Merchants

AREA

<u>Number</u>	<u>Percent</u>	<u>Representing</u>
24	83%	United Kingdom
8	28%	Europe
2	7%	Belgium
1	3%	Sweden
1	3%	Holland

PRODUCTS

8	28%	Large Systems
17	59%	Small Systems
18	62%	Peripherals
23	79%	Terminals
8	28%	Datacommunication
19	66%	Microcomputers
13	45%	Word Processors
4	14%	Copiers
2	7%	PBAX
1	3%	Voice

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- Not in TPM but sometimes service OEM equipment - e.g. Milhouse systems. Reason for not entering TPM "our main business is manufacturing and supplying printers. We service our own products entering this market would mean a dilution in our effectiveness to service our current user base." Their revenues for service are 630K pounds. They would cooperate in supplying resources to a TPM.

D. COMMODORE

- Is not into TPM and probably won't consider it because of an already heavy work load. Might be a candidate for taking over maintenance. Commodore would "probably be obliging" to TPM firms wanting their resources.

E. COMPUTERVISION

- Make about 200K pounds doing TPM on OEM quipment integrated into theirs e.g. versetec printers Benson Plotters etc. They do this type of TPMN because there is a lack of support from OEMS. They would resist anyone attacking their base.

F. DATA GENERAL

- Strongly opposed to doing TPM and no intent to get into it. They say that the grapevine says that DEC bought a small company to experiment in TPM and its a failure. Their attitude towards supporting a TPM is positive only if it does not affect their revenue base.

G. DIGITAL EQUIPMENT CORP

- Conflicting reports as to exactly what DEC's posture is regarding TPM. At least two outside sources, II and DG believe they experimented with TPM and failed. A highly regarded source inb Digital indicated that DEC was definitely not in TPM and "will not enter TPM because the engineering staff have enough to do". The source also indicates that DEC would not support TPM's by supplying

parts training. INPUT believes that this is in the TPM business to the extent of servicing foreign equipment which is compatible to DEC equipment and that this activity will grow rapidly. Current TPM maintainers of DEC gear support this. Also, because of the relatively large number of DEC TPM firms in existence, the facility for getting resources (parts training, etc) must be adequate.

H. ERICSSON

- Not in TPM but services some OEM products integrated in theirs. Would reluctantly support a TPM.

I. FLOATING POINT

- No TPM. Only service CDC disks integrated in their system. Not intending to get into TPM. Reaction to supporting another TPM: "reticent - erosion of floating point image with customers if anything goes wrong because of subcontract activities. Initially would feel threatened (by TPM) and would have to evaluate our customer base and market demands. Objective is to make sure our customer is optimally maintained - we are not primarily a service company".

J. GENERAL AUTOMATION

- Not TM but service integrated OEM geat e.g. VUD and printers. "Not adverse to supporting an independent TPM....." Competition is healthy but would be concerned that TPM would safeguard GA's credibility and good image in the marketplace.

K. HEWLETT-PACKARD

- Not in TPM only OEM integrated equipment e.g. diablo printer. Entering TPM is "totally out of the question." They would provide any help needed from another TPM. "We are concerned that the image of the equipment and company name can be at risk if agents do bad repairs".

L. HITACHI

- Not into TPM but may consider in the future so that "we can offer a total computer service rather than only a part". The question of whether or not Hitachi will provide TPM firms with resources is "academic since all our products are currently maintained by us free of charge for 2 years (warranty) and we so far have not developed a policy decision for maintenance after this time".

M. HONEYWELL

- Not in TPM but service OEM integrated equipment. Were considering being Apple's UK service agent but claimed apple wasn't prepared to give Honeywell exclusivity resulting in no deal. (GCS now has Apple) in US Honeywell is aggressively pursuing TPM. Honeywell UK will observe results and enter TPM only if volumes, revenues and profits justify it. They would reluctantly provide support to TPM and currently do. Legally obliged to provide parts but emergency parts difficult to obtain, would not supply source code. Reticent to provide engineer training but its available as are back up support and repairs.

N. IBM

- Vehemently opposed to doing TPM because with their excellent reputation servicing a competitor's equipment would give the competitor an advantage for selling his hardware against IBM. IBM will support TPMs because of their own company policy which is structured from the 1956 consent decree. Lately, however, they are manipulating prices in an attempt to dissuade TPM's i.e. lowering contract rates and increasing ad hoc rates.
- INPUT contacted IBM to hear their response to the rumour that they were considering TPM companies to service PC.

They indicated that this was an idea about three years ago but not now. Their argument is that if they did select a network of PMs these firms could later attack the larger non-PC IBM base. The opposing theory is that dealer service simply isn't practical in many cases. An extreme example is that of British Airways who have 2,000 IBM PC's and are supposed to use their local dealer (who did not sell them) for service. Whether or not IBM will or will not formally choose TPM firms to represent their service it is certainly advisable to pursue TPM with IBM PC dealers.

O. ICL

- Don't do TPM except on OEM gear in their product line. ICL have broad range of equipment - mainframes to PC's and as such include a variety of OEM e.g. CDC. ICL is considering going into TPM and is so motivated because of an unfilled need for a single network maintenance organisation. ICL will support independent TPM firms if they sign a support agreement which is known to be constraining in that the TPM has to order the kit of spares recommended by ICL no more nor less and the order must be placed 9 months in advance of delivery ".....the service industry is based on very heavy capital investment in spares and a TPM can't jump the queue.."

P. ITT

- Aggressively pursuing TPM on DEC, GA, CDC, Apple and IBM equipment in Italy, Spain, Netherlands, Belgium, Germany and Scandanavia. About 15 customers and a large portion is "in-house" service i.e. ITT owned equipment. They believe they save 19.4 million dollars a year in doing their own service. ITT would cooperate in providing TPM support to others.

Q. KEINZLE

- Not in TPM but looking into it as a revenue adder and better utilisation of engineers. Looking at computer systems as well as medical and security systems for TPM. Would not supply parts to a TPM.

R. 3M

- Currently pursuing TPM each country manager does his own TPM plan. 2 percent of service business in Germany and 20 percent in France. Service about 12 others MFS printers terminals. Electromechanical and money transfer machine. Motivation for entering TPM "as a profitable business area - increases productivity of a large service force". 3M won't service equipment in its own market e.g. copiers. "Quite happy to work with TPM companies".

S. MANNESMAN TALLY

- Got into TPM by accident when they became distributor for C ITOH and got the service responsibility as well. Looking further into TPM and see a potential growth rate of 20% per year. They will supply parts and resources to other TPMs but don't want to jeopardise their own business or the product image.

T. NCR

- Service OEM equipment attached to NCR gear. Would pursue TPM on basis of profitability and for products related to or associated with NCR's on a "case by case" basis. NCR would provide all necessary components to a TPM company.

U. OSBORNE

- Not into TPM but do service OEM's such as NEC, BMC, Star Monitors printers and modems, Osborne will be turning their service over to a TPM. GCS thinks it will be them.

V. PHILIPS

- There are many diverse divisions in Philips. MEL (Defence Systems and Linear Accelerators) responded that they only do TPM for test equipment they use for their own products. They will support independent service of their equipment by supplying parts, documentation and training.

W. PLESSEY

- Not into TPM and no plans but Plessey Communications Systems is actively involved in servicing telephone equipment, security and fire protection equipment. Plessey will only support a TPM company when it doesn't affect them financially and when they are legally obliged.

X. PRIME

- Very slightly into TPM and only provide it for prime users who want them to service OEM attached to prime gear. No plans to change this policy. Will not provide support to TPM.

Y. SHARP

- Does not currently and will not in the future consider TPM. In fact, the only direct service done by Sharp is on electronic cash registers. Sharp dealers and distributors handled their own service.

Sharp appears to have the attitude that service is a necessity to sell hardware. "We see ourselves as a manufacturing/distributing company offering technical support through dealers. Not a history of providing service. Sharp is looking toward operating a sales and service dealer network providing efficient service break up".

Z. TANDY

- Does not do TPM now but may consider in the future because of interfacing requirements with other products. Tandy supports TPMs and dealers who provide service on their products. "No objection to healthy competition. We ally (sic) ourselves with our dealers but do not have 'authorised' Tandy repair service. We have good relations with those companies who buy parts, training, etc".

AA. TEXAS INSTRUMENTS

- Provide TPM for OEM equipment listed in TI price catalogue but are reviewing other TPM opportunities again. "Believe we may have to (consider TPM) as more peripherals which are very price competitive and compatible to TI equipment comes onto the market". They will probably enter the TPM market in the future. TI is "not opposed" to providing their resources to other TPM firms. Their only requirement is that the TPM be reputable and maintains the same quality standards of service tht TI has. They currently subcontract out service their OEM daisy wheel printer but administer the service.

BB. VERRAN MICRO MAINTENANCE

- According to 2 informed sources has revolutionised micro service by diagnosing and repairing on a production line concept. Verran does not advertise and is almost clandestine about their operation because they don't want competitors sharing their ideas or business. They have the exclusive Sinclair service contract. All Sinclair dealers ship the bad units to Verran. They are expanding into other Sinclair products. One source said that Verran repaired 6000 micros per week, which, assuming an average repair charge of \$20 equals \$6.2m

per year. Will find out February 13 if they are interested in joint venture.

CC. WORDPLEX

- Does not do TPM and no plans to. They have enough to do servicing 6000 machines with 140 engineers. Policy towards supporting TPMs : "Total resistance".

APPENDIX: USER QUESTIONNAIRE
VENDOR QUESTIONNAIRE
MANUFACTURER/DEALER/DISTRIBUTOR
QUESTIONNAIRE

QUESTIONNAIRECurrently Using TPM

- I A. If currently using TPM, for how long _____ who _____
- B. Is it good - adequate - poor - service?
- C. Do you intend to continue using TPM? _____
- D. Would you consider another TPM vendor? _____
- E. Principal motivations for using TPM _____
- F. Go to II E

Consideration of TPM

- II A. What would it take to sell you on TPM? _____
- _____
- B. Would you be willing to try an experiment using TPM for
part of your equipment? _____
- C. Which experiment? _____
- D. Multiple location? _____
- E. Assuming that a TPM company were available to provide
service on your equipment please indicate attributes
you would like to see in such a company. Choose eight (8).
1. Large, well know firm _____
 2. Close in proximity _____
 3. References for successful operation _____
 4. Guaranteed spare parts availability _____
 5. Personal Touch _____
 6. Economical _____
 7. Ability to maintai hybrid systems _____
 8. Well training field engineers _____
 9. Good diagnostics and test equipment _____
 10. Close relationship to manufacturer _____
 11. Fast turnover on repairs _____
 12. Software support _____
 13. Guaranteed uptime _____
 14. Other _____

Date of Interview	Person Interviewed
11/1/2011	John Doe
11/1/2011	Jane Smith
11/1/2011	Bob Johnson
11/1/2011	Alice Brown
11/1/2011	Charlie White
11/1/2011	Diana Green
11/1/2011	Frank Black
11/1/2011	Grace Lee
11/1/2011	Henry King
11/1/2011	Ivy Hill
11/1/2011	Jack Adams
11/1/2011	Karen Baker
11/1/2011	Leo Clark
11/1/2011	Mia Evans
11/1/2011	Noah Foster
11/1/2011	Olivia Garcia
11/1/2011	Peter Hall
11/1/2011	Quinn Ives
11/1/2011	Rachel Jones
11/1/2011	Samuel King
11/1/2011	Tina Lee
11/1/2011	Uma Miller
11/1/2011	Victor Nelson
11/1/2011	Wendy Ortiz
11/1/2011	Xavier Perez
11/1/2011	Yara Quinn
11/1/2011	Zoe Reed

	1982	1983	1984	1985	1986
1. <i>Chrysomelidae</i>	1	1	1	1	1
2. <i>Curculionidae</i>	1	1	1	1	1
3. <i>Chrysomelidae</i>	1	1	1	1	1
4. <i>Chrysomelidae</i>	1	1	1	1	1
5. <i>Chrysomelidae</i>	1	1	1	1	1
6. <i>Chrysomelidae</i>	1	1	1	1	1
7. <i>Chrysomelidae</i>	1	1	1	1	1
8. <i>Chrysomelidae</i>	1	1	1	1	1
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64. <i>Chrysomelidae</i>	1	1	1	1	1
65. <i>Chrysomelidae</i>	1	1	1	1	1
66. <i>Chrysomelidae</i>	1	1	1	1	1

A. Turnover

B. Profit & Pretax

C. Assets

D. Composition of Revenue

A. Territory

B. Service locations

C. Number of Engineers

D. Number of Tech Support

A. Current

B. Future

C. Relationship to Manufacturer

6. Joint Venture/Aquisition Attitude

YBCI Phase 3

1. Do you service any equipment other than your own? Y _____ N _____
(If not proceed to Question 8)

2. Current TPM turnover = £ _____

3. Current TPM turnover % Total Service Turnover = £ _____

4. Products maintained Now (N) or Future (F)

MFG

MODEL NO

5. Where do you perform TPM? _____

6. Number of customers (TPM) _____

7. Type of TPM customers (TPM) _____

8. Motivation for Entering (or not entering) TPM

9. Future:

Plans _____

Growth Projections _____

10. Your company's policies for providing resources to independent service firms wanting to maintain your equipment:

Parts _____

Revisions/Updates _____

Training _____

Back-up Engineering Support _____

Repairs _____

A. Thomas		Y-BC1 1984	C.2
AUTHOR			
Third Party Maintenance			
TITLE			
Opportunities for Bell Canada Intl			
DATE LOANED	BORROWER'S NAME		
5-15-84	Graham		



Y-BC1
1984
C.2

